

**IN THE CLAIMS:**

Please amend claims 1-8 and add new claims 9-11 as follows:

1. (Currently Amended) A mass spectrometer, comprising:
  - an atmospheric pressure chemical ionization source having a primary ionization part for generating a primary ion by means of electric discharge of a reagent gas, [[and]] a secondary ionization part for generating an ion of a sample gas by a reaction of said primary ion and said sample gas, and a hole disposed between said primary ionization part and said secondary ionization part as a passage for said primary ion to enter from said primary ionization part into said secondary ionization part while said secondary ionization part being maintained at negative pressure as compared with said primary ionization part;
  - a mass spectrometric part for performing mass spectrometric analysis of said ion generated in said secondary ionization part;
  - a mixing portion for mixing said sample gas to be introduced into said secondary ionization part with a dilution gas;
  - means for controlling a flow rate of said dilution gas for flowing through said mixing portion; and
  - means for controlling a flow rate of said sample gas for flowing through said mixing portion,

wherein mixed gas obtained by mixing said sample gas with said dilution gas is introduced into said secondary ionization part.
2. (Currently Amended) The mass spectrometer according to Claim 1, wherein an ionization potential of said dilution gas is the same as or higher than an ionization potential of a substance targeted for measurement in said sample gas, or proton affinity of said dilution gas is the same as or lower than that of the substance targeted for measurement in said sample gas.
3. (Currently Amended) The mass spectrometer according to Claim 2, wherein said sample gas is a sample to be collected from an inlet piping for introducing gas or liquid to a fuel cell or an outlet piping for discharging gas or liquid from said fuel cell.

4. (Currently Amended) The mass spectrometer according to Claim 3, wherein said reagent gas for generating said primary ion is argon or helium.
5. (Currently Amended) The mass spectrometer according to Claim 3, wherein an outlet flow rate of said reagent gas to said secondary ionization part is ~~within a range of ( between~~ 0.1 to 0.3 } L/min.
6. (Currently Amended) A mass spectrometer, comprising:
  - an atmospheric pressure chemical ionization source having a primary ionization part for generating a primary ion by means of electric discharge of a reagent gas, [[and]] a secondary ionization part for generating an ion of [[said]] a sample gas by a reaction of said primary ion and sample gas to be collected from a gas outlet piping on a cathode of a fuel cell, and a hole disposed between said primary ionization part and said secondary ionization part as a passage for said primary ion to enter from said primary ionization part into said secondary ionization part while said secondary ionization part being maintained at negative pressure as compared with said primary ionization part;
  - a mass spectrometric part for performing mass spectrometric analysis of said ion generated in said secondary ionization part;
  - a mixing portion for mixing said sample gas to be introduced into said secondary ionization part with dilution gas;
  - means for controlling a flow rate of said dilution gas for flowing through said mixing portion; and
  - means for controlling a flow rate of said sample gas for flowing through said mixing portion,
    - wherein said means for controlling a flow rate of said sample gas is disposed at an outlet piping of said atmospheric pressure chemical ionization source, and mixed gas obtained by mixing said sample gas with said dilution gas is introduced into said secondary ionization part, and said dilution gas is any of argon, helium and nitrogen, and hydrogen in said sample gas is detected.
7. (Currently Amended) The mass spectrometer according to Claim 6, wherein a flow rate of said dilution gas for flowing through said mixing portion is higher than that of said

sample gas for flowing through said mixing portion.

8. (Currently Amended) The mass spectrometer according to Claim 6, wherein an outlet flow rate of said reagent gas to said secondary ionization part is ~~within a range of ( between~~ 0.1 to 0.3 } L/min.
9. (New) The mass spectrometer according to Claim 1, wherein said means for controlling a flow rate of said sample gas is disposed at an outlet piping of said atmospheric pressure chemical ionization source.
10. (New) The mass spectrometer according to Claim 1, wherein said reagent gas is ionized in the vicinity of an electrode and than passing through said hole arranged in a counter electrode set between said primary ionization part and said secondary ionization part.
11. (New) The mass spectrometer according to Claim 6, wherein said reagent gas is ionized in the vicinity of an electrode and than passing through said hole arranged in a counter electrode set between said primary ionization part and said secondary ionization part.